AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (CURRENTLY AMENDED) An isolated polynucleotide comprising a nucleotide sequence chosen from:

a) a nucleotide sequence of SEQ ID NO: 1, SEQ ID NO: 3, SEQ ID NO: 5 or SEQ ID NO: 7;

b) a nucleotide sequence encoding ~~the IGS4~~ a polypeptide according to SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6 or SEQ ID NO: 8, wherein the polypeptide is an IGS4 polypeptide;

c) a nucleotide sequence ~~encoding the polypeptide encoded by~~ of the DNA insert contained in the deposit no. CBS102221 or the deposit no. CBS102222 at the Centraalbureau voor Schimmelcultures at Baarn the Netherlands;

d) a nucleotide sequence having at least 80 % sequence identity over its entire length to the nucleotide sequence of (a), (b), or (c); or

e) a nucleotide sequence which is complimentary to the nucleotide sequence of (a) or (b) or (c) or (d).

2. (PREVIOUSLY PRESENTED) The polynucleotide of claim 1 wherein said polynucleotide comprises:

a) the nucleotide sequence contained in SEQ ID NO: 1 encoding the IGS4 polypeptide of SEQ ID NO: 2;

b) the nucleotide sequence contained in SEQ ID NO: 3 encoding the IGS4 polypeptide of SEQ ID NO: 4;

c) the nucleotide sequence contained in SEQ ID NO: 5 encoding the IGS4 polypeptide of SEQ ID NO: 6; or

d) the nucleotide sequence contained in SEQ ID NO: 7 encoding the IGS4 polypeptide of SEQ ID NO: 8.

3. (CANCELED)

4. (CANCELED)

5. (CURRENTLY AMENDED) The isolated polynucleotide of claim 1 which is DNA or RNA.

6. (CURRENTLY AMENDED) An isolated nucleotide sequence encoding an IGS4 neuromedin receptor protein of SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, or SEQ ID NO: 8, said protein exhibiting high affinity binding for neuromedin U.

7. (CURRENTLY AMENDED) The isolated nucleotide sequence of claim 6 encoding a polypeptide ~~an IGS4 neuromedin receptor protein~~, wherein said polypeptide ~~protein exhibiting expression~~ is expressed in at least one of brain, skeletal muscle, cerebellum, testis, corpus callosum, spinal cord, substantia nigra, medulla, thalamus, caudate nucleus, pons, nucleus accumbens, fetal brain, stomach, heart, thyroid gland, lung, thymus, prostate, and trachea.

8. (CURRENTLY AMENDED) An isolated nucleotide sequence encoding an IGS4 neuromedin receptor protein of SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, or SEQ ID NO: 8, wherein said protein ~~exhibiting~~ exhibits high affinity binding for neuromedin U, and is expressed ~~said protein exhibiting expression~~ in at least one of brain, skeletal muscle, cerebellum, testis, corpus callosum, spinal cord, substantia nigra, medulla, thalamus, caudate nucleus, pons, nucleus accumbens, fetal brain, stomach, heart, thyroid gland, lung, thymus, prostate, and trachea, and said nucleotide sequence being selected from the group of nucleotide sequences as defined in claim 1.

9. (PREVIOUSLY PRESENTED) An expression system comprising a DNA or RNA molecule, wherein said expression system produces an IGS4 polypeptide comprising an amino acid sequence, which has at least 80% identity with the polypeptide of SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6 or SEQ ID NO: 8 or with the polypeptide encoded by the DNA insert contained in the deposit no. CBS1 02221 or the deposit no. CBS1 02222 at the Centraalbureau voor Schimmelcultures at Baarn the Netherlands, when said expression system is present in a compatible host cell.

10. (CURRENTLY AMENDED) An expression system comprising an isolated DNA or RNA molecule, wherein said expression system produces an IGS4 polypeptide of SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, or SEQ ID NO: 8 comprising an amino acid sequence which is a neuromedin receptor protein, wherein said protein ~~exhibiting~~ exhibits high affinity binding for neuromedin U, and ~~exhibiting expression~~ is expressed in at least one of brain, skeletal muscle, cerebellum, testis, corpus callosum, spinal cord, substantia nigra, medulla, thalamus, caudate nucleus, pons, nucleus accumbens, fetal brain, stomach, heart, thyroid gland, lung, thymus, prostate, and trachea.

11. (PREVIOUSLY PRESENTED) A host cell comprising the expression system of claim 9.

12. (PREVIOUSLY PRESENTED) The host cell according to claim 11 wherein the host cell is a yeast cell.

13. (PREVIOUSLY PRESENTED) A host cell according to claim 11 wherein the host cell is an animal cell.

14. (CURRENTLY AMENDED) ~~An IGS4 receptor~~ A membrane preparation prepared from a cell ~~according to claim 11~~, wherein the cell comprises an expression system comprising a DNA or RNA molecule, wherein said expression system produces an IGS4 polypeptide comprising an amino acid sequence of SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, or SEQ ID NO: 8 or the polypeptide encoded by the DNA insert contained in the deposit no. CBS1 02221 or the deposit no. CBS1 02222 at the Centraalbureau voor Schimmelcultures at Baarn the Netherlands, when said expression system is present in a compatible host cell.

15. (CURRENTLY AMENDED) A process for producing an IGS4 polypeptide of SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, or SEQ ID NO: 8 comprising culturing [[a]] the host cell of claim 11 under conditions sufficient for the production of said polypeptide and recovering the polypeptide from the culture.

16. (CURRENTLY AMENDED) A process for producing a cell which produces an IGS4 polypeptide of SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, or SEQ ID NO: 8 comprising transforming or transfecting a host cell with the expression system

of claim 9 such that the host cell, under appropriate culture conditions, produces an IGS4 polypeptide of SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, or SEQ ID NO: 8.

17. (CURRENTLY AMENDED) An isolated IGS4 polypeptide comprising an amino acid sequence of SEQ ID NO: 2, SEQ NO: 4, SEQ NO: 6, or SEQ NO: 8 or the polypeptide encoded by the DNA insert contained in the deposit no. CBS102221 or the deposit no. CBS102222 at the Centraalbureau voor Schimmelcultures at Baarn the Netherlands over its entire length.

18. (CURRENTLY AMENDED) [[The]] An isolated IGS4 polypeptide ~~of claim 17~~ wherein the polypeptide is at least 80% identical to the amino acid sequence of SEQ ID NO: 2, SEQ ID NO: 4, SEQ NO: 6 or SEQ NO: 8 or the amino acid sequence encoded by the DNA insert contained in the deposit no. CBS102221 or the deposit no. CBS102222 at the Centraalbureau voor Schimmelcultures at ~~Baam~~ Baarn the Netherlands.

19. (CURRENTLY AMENDED) An isolated IGS4 polypeptide of SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, SEQ ID NO: 8 comprising an amino acid sequence of a neuromedin receptor protein, wherein said protein exhibiting high affinity binding for neuromedin U.

20. (CURRENTLY AMENDED) The isolated IGS4 polypeptide of claim 19 comprising an amino acid sequence of a neuromedin receptor protein, wherein said protein ~~exhibiting expression~~ is expressed in at least one of brain, skeletal muscle, cerebellum, testis, corpus callosum, spinal cord, substantia nigra, medulla, thalamus,

caudate nucleus, pons, nucleus accumbens, fetal brain, stomach, heart, thyroid gland, lung, thymus, prostate, and trachea.

21. (PREVIOUSLY PRESENTED) An isolated IGS4 polypeptide comprising an amino acid sequence of a neuromedin receptor protein, wherein said protein ~~exhibiting~~ exhibits high affinity binding for neuromedin U, and wherein said protein ~~exhibiting expression~~ is expressed in at least one of brain, skeletal muscle, cerebellum, testis, corpus callosum, spinal cord, substantia nigra, medulla, thalamus, caudate nucleus, pons, nucleus accumbens, fetal brain, stomach, heart, thyroid gland, lung, thymus, prostate, and trachea, and said amino acid sequence being selected from the group of amino acid sequences as defined in claim 17.

22. (WITHDRAWN) An antibody immunospecific for the IGS4 polypeptide of claim 17.

23. (WITHDRAWN) A method for the treatment of a subject in need of enhanced activity or expression of IGS4 polypeptide of claim 17 comprising at least one of:

(a) administering to the subject a therapeutically effective amount of an agonist to said receptor;

(b) providing to the subject an isolated polynucleotide comprising a nucleotide sequence that has at least 80% identity to a nucleotide sequence encoding the IGS4 polypeptide of SEQ ID NO: 2, SEQ ID NO: 4, SEQ NO: 6 or SEQ NO: 8 or the polypeptide encoded by the DNA insert contained in the deposit no. CBS102221 or the deposit no. CBS102222 at the Centraalbureau voor Schimmelcultures at Baarn the

Netherlands over its entire length; or a nucleotide sequence complementary to one of said nucleotide sequences in a form so as to effect production of said receptor activity in vivo; and,

(c) providing to the subject an isolated polynucleotide comprising a nucleotide sequence that encodes an IGS4 neuromedin receptor protein, said protein exhibiting high affinity binding for neuromedin U.

24. (WITHDRAWN) A method for the treatment of a subject having need to inhibit activity or expression of IGS4 polypeptide of claim 17 comprising at least one of:

(a) administering to the subject a therapeutically effective amount of an antagonist to said receptor;

(b) administering to the subject a nucleic acid molecule that inhibits the expression of the nucleotide sequence encoding said receptor; and,

(c) administering to the subject a therapeutically effective amount of a polypeptide that competes with said receptor for its ligand.

25. (WITHDRAWN) A process for diagnosing a disease or a susceptibility to a disease in a subject related to expression or activity of the IGS4 polypeptide of claim 17 in a subject comprising at least one of:

(a) determining the presence or absence of a mutation in the nucleotide sequence encoding said IGS4 polypeptide in the genome of said subject; and,

(b) analyzing for the presence or amount of the IGS4 polypeptide expression in a sample derived from said subject.

26. (CURRENTLY AMENDED) A method for identifying agonists to the isolated IGS4 polypeptide of claim 17 comprising:

(a) contacting a cell which produces [[a]] an IGS4 polypeptide with a test compound; and

(b) determining whether the test compound effects a signal generated by activation of the IGS4 polypeptide.

27. (WITHDRAWN) An agonist identified by the method of claim 26.

28. (CURRENTLY AMENDED) A method for identifying agonists to ~~the~~ an IGS4 neuromedin receptor protein, wherein said protein ~~exhibiting~~ exhibits high affinity binding for neuromedin U, comprising:

(a) contacting a cell which produces [[a]] an IGS4 neuromedin receptor protein of SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6 or SEQ ID NO: 8 with a test compound; and

(b) determining whether the test compound effects a signal generated by activation of the IGS4 neuromedin receptor protein.

29. (CURRENTLY AMENDED) [[A]] The method ~~for identifying agonists to the IGS4 neuromedin receptor protein according to~~ of claim 28, wherein said agonists are effective with regard to at least one of disorders of the nervous system, disorders of the gastrointestinal system, disorders of the cardiovascular system, disorders of the skeletal muscle, disorders of the thyroid, lung diseases, immunological diseases, and disorders of the genitourinary system.

30. (WITHDRAWN) An agonist identified by the method of claim 28.

31. (CURRENTLY AMENDED) A method for identifying antagonists to the isolated IGS4 polypeptide of claim 17 comprising:

(a) contacting a cell which produces [[a]] an IGS4 polypeptide with an agonist; and

(b) determining whether the signal generated by said agonist is diminished in the presence of a candidate compound.

32. (WITHDRAWN) An antagonist identified by the method of claim 31.

33. (CURRENTLY AMENDED) A method for identifying antagonists to the IGS4 neuromedin receptor protein, said protein exhibiting high affinity binding for neuromedin U, comprising:

(a) contacting a cell which produces a IGS4 neuromedin receptor protein of SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, or SEQ ID NO: 8 with an agonist; and

(b) determining whether the signal generated by said agonist is diminished in the presence of a candidate compound.

34. (CURRENTLY AMENDED) A method for identifying antagonists to the IGS4 neuromedin receptor protein according to claim 33, wherein said antagonists are effective with regard to at least one disorder chosen from disorders of the nervous system, the gastrointestinal system, the cardiovascular system, the skeletal muscle, the thyroid, the lung, immune system, or the genitourinary system.

35. (WITHDRAWN) An antagonist identified by the method of claim 33.

36. (CURRENTLY AMENDED) A recombinant host cell, ~~or a membrane of a recombinant host cell~~ produced by the method of claim 16 wherein the host cell ~~or membrane~~ expresses an IGS4 polypeptide.

37. (WITHDRAWN) A method of creating a genetically modified non-human animal comprising:

(a) ligating the coding portion of a nucleic acid molecule, consisting essentially of a nucleic acid sequence encoding a protein having the amino acid sequence SEQ ID NO: 2, SEQ ID NO: 4, SEQ NO: 6 or SEQ NO: 8 or the amino acid sequence encoded by the DNA insert contained in the deposit no. CBS102221 or the deposit no. CBS1 02222 at the Centraalbureau voor Schimmelcultures at Baarn the Netherlands or a biologically active portion of one of said sequences, to a regulatory sequence which is capable of driving high level gene expression or expression in a cell type in which the gene is not normally expressed in said animal; or

(b) isolation and engineering the coding portion of a nucleic acid molecule, consisting essentially of a nucleic acid sequence encoding a protein having the amino acid sequence SEQ ID NO: 2, SEQ ID NO: 4, SEQ NO: 6 or SEQ NO: 8 or the amino acid sequence encoded by the DNA insert contained in the deposit no. CBS102221 or the deposit no. CBS102222 at the Centraalbureau voor Schimmelcultures at Baarn the Netherlands or a biologically active portion of one of said sequences, and reintroducing said sequence in the genome of said animal in such a way that the endogenous gene alleles, encoding a protein having the amino acid sequence SEQ ID NO: 2, SEQ ID NO: 4, SEQ NO: 6 or SEQ NO: 8 or the amino acid sequence encoded by the DNA insert contained in the deposit no. CBS102221 or the deposit no. CBS102222 at the

Centraalbureau voor Schimmelcultures at Baarn the Netherlands or a biologically active portion of one of said sequences, are fully or partially inactivated.

38. (CURRENTLY AMENDED) A method of determining whether a substance is a potential ligand of an IGS4 receptor comprising:

(a) contacting cells expressing ~~the receptor~~ an IGS4 polypeptide of ~~claim 17 or~~ one of SEQ ID NO:2, SEQ ID NO: 4, SEQ ID NO: 6 and SEQ ID NO:8, or contacting [[a]] the receptor membrane preparation ~~comprising one of said receptors~~ of claim 14 [[17]] ~~or one of SEQ ID NO:2, SEQ ID NO:4 SEQ ID NO:6 and SEQ ID NO:8~~ with labeled neuromedin U in the presence and in the absence of the substance; and

(b) measuring the binding of neuromedin U to the IGS4 polypeptide of SEQ ID NO: 2, SEQ ID NO: 4, SEQ ID NO: 6, or SEQ ID NO: 8.

39. (CURRENTLY AMENDED) [[A]] An isolated polypeptide according to[[,]] claim 17, wherein the polypeptide binds neuromedin U, and has an affinity of about at least log EC_{50}=-6.

40. (CURRENTLY AMENDED) [[A]] An isolated polypeptide according to[[,]] claim 17, wherein the polypeptide binds neuromedin U, and has an affinity of at least about log EC_{50}=-9.

41. (PREVIOUSLY PRESENTED) The isolated polynucleotide of claim 1, wherein the nucleotide sequence has at least 90% sequence identity over its entire length to the nucleotide sequence of (a) (b) or (c).

42. (CURRENTLY AMENDED) The isolated ~~nucleotide sequence~~ polynucleotide of claim 6, wherein the IGS4 neuromedin receptor protein is a mammalian neuromedin receptor protein and neuromedin U is at least one of neuromedin U-8, neuromedin U-23, and neuromedin U-25.

43. (PREVIOUSLY PRESENTED) The isolated nucleotide sequence of claim 8, wherein the IGS4 neuromedin receptor protein is a mammalian neuromedin receptor protein and neuromedin U is at least one of neuromedin U-8, neuromedin U-23, and neuromedin U-25.

44. (PREVIOUSLY PRESENTED) The isolated DNA or RNA molecule of claim 10, wherein the IGS4 neuromedin receptor protein is a mammalian neuromedin receptor protein and neuromedin U is at least one of neuromedin U-8, neuromedin U-23, and neuromedin U-25.

45. (PREVIOUSLY PRESENTED) The isolated IGS4 polypeptide of claim 19, wherein the IGS4 neuromedin receptor protein is a mammalian neuromedin receptor protein and neuromedin U is at least one of neuromedin U-8, neuromedin U-23, and neuromedin U-25.

46. (PREVIOUSLY PRESENTED) The isolated IGS4 polypeptide of claim 21, wherein the IGS4 neuromedin receptor protein is a mammalian neuromedin receptor protein and neuromedin U is at least one of neuromedin U-8, neuromedin U-23, and neuromedin U-25.

47. (WITHDRAWN) The method of treatment of claim 23, wherein the IGS4 neuromedin receptor protein is a mammalian neuromedin receptor protein and neuromedin U is at least one of neuromedin U-8, neuromedin U-23, and neuromedin U-25.

48. (PREVIOUSLY PRESENTED) The method of identifying agonists of claim 28, wherein the IGS4 neuromedin receptor protein is a mammalian neuromedin receptor protein and neuromedin U is at least one of neuromedin U-8, neuromedin U-23, and neuromedin U-25.

49. (WITHDRAWN) The agonist of claim 30, wherein the agonist is effective with regard to at least one disorder chosen from disorders of the nervous system, the gastrointestinal system, the cardiovascular system, the skeletal muscle, the thyroid, the lung, the immune system, or the genitourinary system.

50. (PREVIOUSLY PRESENTED) The method of identifying antagonists of claim 33, wherein the IGS4 neuromedin receptor protein is a mammalian neuromedin receptor protein and neuromedin U is at least one of neuromedin U-8, neuromedin U-23, and neuromedin U-25.

51. (WITHDRAWN) The antagonist of claim 35, wherein the antagonist is effective with regard to disorders of at least one of the nervous system, the gastrointestinal system, the cardiovascular system, the skeletal muscle, the thyroid, the lung, the immune system, and the genitourinary system.

52. (CURRENTLY AMENDED) The isolated polypeptide of claim 39, wherein the neuromedin U is at least one of neuromedin U-8, neuromedin U-23, and neuromedin U-25.

53. (CURRENTLY AMENDED) The isolated polypeptide of claim 40, wherein the neuromedin U is at least one of neuromedin U-8, neuromedin U-23, and neuromedin U-25.

54. (PREVIOUSLY PRESENTED) A host cell comprising the expression system of claim 10.

55. (PREVIOUSLY PRESENTED) The method of identifying agonists to the IGS4 neuromedin receptor protein according to claim 29, wherein disorders of the nervous system are disorders of the central nervous system (CNS) or the peripheral nervous system (PNS).

56. (PREVIOUSLY PRESENTED) The method for identifying antagonists to the IGS4 neuromedin receptor protein according to claim 34, wherein disorders of the nervous system are disorders of the central nervous system (CNS) or the peripheral nervous system (PNS).

57. (WITHDRAWN) The agonist of claim 49, wherein the disorders of the nervous system are disorders of the central nervous system (CNS) or peripheral nervous system (PNS).

58. (WITHDRAWN) The antagonist of claim 51, wherein the disorders of the nervous system are disorders of the central nervous system (CNS) and peripheral nervous system (PNS).

59. (WITHDRAWN) An agonist identified by the method of claim 29.

60. (CURRENTLY AMENDED) An isolated IGS4 polypeptide comprising an amino acid sequence of a neuromedin receptor protein, wherein said protein exhibiting high affinity binding for neuromedin U, wherein said protein ~~exhibiting expression~~ is expressed in at least one of brain, skeletal muscle, cerebellum, testis, corpus callosum, spinal cord, substantia nigra, medulla, thalamus, caudate nucleus, pons, nucleus accumbens, fetal brain, stomach, heart, thyroid gland, lung, thymus, prostate, and trachea, and said amino acid sequence being selected from the group of amino acid sequences as defined in claim 18.

61. (WITHDRAWN) An antibody immunospecific for the IGS4 polypeptide of claim 18.

62. (WITHDRAWN) A method for the treatment of a subject in need of enhanced activity or expression of IGS4 polypeptide of claim 18 comprising at least one of:

(a) administering to the subject a therapeutically effective amount of an agonist to said receptor;

(b) providing to the subject an isolated polynucleotide comprising a nucleotide sequence that has at least 80% identity to a nucleotide sequence encoding the IGS4 polypeptide of SEQ ID NO: 2, SEQ ID NO: 4, SEQ NO: 6 or SEQ NO: 8 or the

polypeptide encoded by the DNA insert contained in the deposit no. CBS102221 or the deposit no. CBS102222 at the Centraalbureau voor Schimmelcultures at Baarn the Netherlands over its entire length; or a nucleotide sequence complementary to one of said nucleotide sequences in a form so as to effect production of said receptor activity in vivo; and,

(c) providing to the subject an isolated polynucleotide comprising a nucleotide sequence that encodes an IGS4 neuromedin receptor protein, said protein exhibiting high affinity binding for neuromedin U.

63. (WITHDRAWN) A method for the treatment of a subject having need to inhibit activity or expression of IGS4 polypeptide of claim 18 comprising at least one of:

(a) administering to the subject a therapeutically effective amount of an antagonist to said receptor;

(b) administering to the subject a nucleic acid molecule that inhibits the expression of the nucleotide sequence encoding said receptor; and,

(c) administering to the subject a therapeutically effective amount of a polypeptide that competes with said receptor for its ligand.

64. (WITHDRAWN) A process for diagnosing a disease or a susceptibility to a disease in a subject related to expression or activity of the IGS4 polypeptide of claim 18 in a subject comprising at least one of:

(a) determining the presence or absence of a mutation in the nucleotide sequence encoding said IGS4 polypeptide in the genome of said subject; and,

(b) analyzing for the presence or amount of the IGS4 polypeptide expression in a sample derived from said subject.

65. (WITHDRAWN) A method for identifying agonists to the IGS4 polypeptide of claim 18 comprising:

(a) contacting a cell which produces a IGS4 polypeptide with a test compound; and

(b) determining whether the test compound effects a signal generated by activation of the IGS4 polypeptide.

66. (WITHDRAWN) A method for identifying antagonists to the IGS4 polypeptide of claim 18 comprising:

(a) contacting a cell which produces a IGS4 polypeptide with an agonist; and

(b) determining whether the signal generated by said agonist is diminished in the presence of a candidate compound.

67. (WITHDRAWN) A method of determining whether a substance is a potential ligand of IGS4 receptor comprising:

(a) contacting cells expressing the receptor of claim 18 or one of SEQ ID NO:2, SEQ ID NO:4 SEQ ID NO:6 and SEQ ID NO:8, or contacting a receptor membrane preparation comprising one of said receptors of claim 18 or one of SEQ ID NO:2, SEQ ID NO:4 SEQ ID NO:6 and SEQ ID NO:8 with labeled neuromedin U in the presence and in the absence of the substance; and

(b) measuring the binding of neuromedin U to IGS4.

68. (PREVIOUSLY PRESENTED) A polypeptide according to, claim 18, wherein the polypeptide binds neuromedin U, and has an affinity of about at least log EC_{50}=-6.

69. (PREVIOUSLY PRESENTED) A polypeptide according to, claim 18, wherein the polypeptide binds neuromedin U, and has an affinity of at least about log EC_{50}=-9.